



Tetraethylene Glycol

Date of Preparation: 06/15

SDS No. 30324

Revision: 0

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Tetraethylene Glycol

Synonyms: TTEG; Tetraglycol; T4EG; TETRA; Ethanol, 2,2'oxybis(2,1-ethanediolyoxy)} bis-

CAS Number: 112-60-7

Chemical Formula: $\text{HO}(\text{H}_2\text{H}_4\text{O})_4\text{H}$ ($\text{C}_8\text{H}_{18}\text{O}_5$)

General Use: Various

Manufacturer: KMCO, 16503 Ramsey Road, Crosby, Texas 77532

24-HOUR EMERGENCY NUMBER - CHEMTREC: 1-800-424-9300

KMCO PHONE: (281) 328-3501

FAX: (281) 328-9528

Restrictions on Use:

SECTION 2: HAZARD(S) IDENTIFICATION

Hazard Classification:

OSHA Hazards: No OSHA Hazards

Target Organs: May cause damage to kidneys through prolonged or repeated exposure.

GHS Classification:

Eye irritation (Category 2B)

Skin irritation (Category 3)

Specific target organ toxicity – single exposure (Category 3)

Specific target organ toxicity – repeated exposure (Category 2)

Signal Word: *WARNING*





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Hazard Statements:

H302	Harmful if swallowed
H316	Causes mild skin irritation.
H320	Causes eye irritation.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements:

P261	Avoid breathing dust/fumes/gas/mist/vapors.
P264	Wash thoroughly after handling.
P270	Do not eat drink or smoke when using this product.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor / physician if you feel unwell.
P330	Rinse mouth.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P314	Get medical advice/attention if you feel unwell.

NFPA Rating

Health hazard:	1
Fire:	1
Reactivity:	0

Description of Any Other Hazards Not Otherwise Classified: none known

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENT Name:</u>	<u>CAS NUMBER</u>	<u>%wt. or %v</u>
Tetraethylene Glycol	112-60-7	95
Triethylene Glycol	112-27-6	3
Pentaethylene Glycol	4792-15-8	2

SECTION 4: FIRST AID MEASURES

EYES: Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention.



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SKIN: Wash skin with soap and copious amounts of water. Seek medical attention.

INGESTION: NEVER give anything by mouth to an unconscious person. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Immediately have victim drink several glasses of water to dilute. Seek medical attention.

INHALATION: Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Treat in accordance to symptoms (decontamination, vital functions), no known specific antidote

SECTION 5: FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak, and disperse vapors.

UNSUITABLE EXTINGUISHING MEDIA: Direct water stream.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. Do not use direct water stream to extinguish fires. Product may travel with water and reignite. Vapors can flow along surfaces to distant ignition source and flash back. Do not release runoff from fire control methods to sewers or waterways.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Above flash point, vapor-air mixtures are explosive within flammable limits. Contact with strong oxidizers may cause fire. Containers may explode when involved in a fire.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS: Wear full protective clothing and NIOSH – approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive breathing mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES



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PERSONAL PRECAUTIONS: Use appropriate personal protective equipment. Avoid breathing vapors, mist or gas. Avoid contact with spilled material. Insure adequate ventilation. Remove all sources of ignition. Use non-sparking tools and equipment.

PROTECTIVE CLOTHING: Standard work uniform. Impervious gloves. Safety glasses. Personnel should increase PPE level as deemed appropriate in any given situation.

EMERGENCY PROCEDURES:

SMALL SPILLS: Contain and recover liquid when possible. Collect liquid in appropriate container or absorb with an inert material (such as vermiculite or dry sand) and place in chemical waste container. Do not use combustible materials such as sawdust for the cleanup.

LARGE SPILLS:

Containment: Shut off source of leak if safe to do so. Dike far ahead of liquid spill for later disposal. Do not allow material to enter sewers or waterways.

Cleanup: Contain and recover liquid when possible. Collect liquid in appropriate container. Absorb residue with an inert material (such as vermiculite or dry sand) and place in chemical waste container. Do not use combustible materials such as sawdust for the cleanup.

SECTION 7: HANDLING AND STORAGE

HANDLING PRECAUTIONS: Do not get on skin or in eyes. Do not inhale vapor or mist. Take normal fire prevention measures.

STORAGE REQUIREMENTS: Keep container tightly closed in a cool, dry and well-ventilated place. Product is hygroscopic.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Controls should be such that adequate ventilation is provided.

VENTILATION: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work place by controlling it at its source.

RESPIRATORY PROTECTION: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA / NIOSH approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For



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emergency or non-routine operations (e.g. cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

EYE PROTECTION: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133) Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses.

SKIN PROTECTION: Wear chemically protective gloves, boots, aprons and gauntlets to prevent prolonged or repeated skin contact.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Make emergency eyewash stations, safety/quick drench showers and washing facilities available in work areas.

WORK HYGIENIC PRACTICES: Never eat, drink or smoke in work areas. Practice good personal hygiene after using this material especially before eating, drinking, smoking, using the toilet, or applying cosmetics. Separate contaminate work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Discard belts and shoes that cannot be cleaned.

EXPOSURE GUIDELINES:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		USA WEEL OR IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Tetraethylene Glycol	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Triethylene Glycol	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Pentaethylene Glycol	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

APPEARANCE AND COLOR: Clear/Colorless



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ODOR: Mild odor

FLASH POINT: 395° F (201.6° C)

UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: N/A

AUTO IGNITION TEMPERATURE: N/A

DECOMPOSITION TEMPERATURE: N/A

VAPOR PRESSURE: <0.01 mm Hg @ 20 C

ODOR THRESHOLD: N/A

VAPOR DENSITY (air = 1): 3.66

pH: 6-9

RELATIVE DENSITY: 9.3 lbs/gal @ 20°C

SPECIFIC GRAVITY (H₂O =1 AT 4 C): 1.125

MELTING POINT / FREEZING POINT: -5° C (23° F)

WATER SOLUBILITY: Soluble

OTHER SOLUBILITIES: Alcohols, methyl isosbutyl carbitol

INITIAL BOILING POINT AND BOILING RANGE: N/A

EVAPORATION RATE (BuAc = 1): N/A

PARTITION COEFFICIENT: n-OCTANOL/WATER: N/A

VISCOSITY: 58.3cP @ 25° C

REFRACTIVE INDEX: N/A

FORMULA WEIGHT: 194 g/mol

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: none under normal handling

STABILITY: stable at room temperature under normal storage and handling conditions

CONDITIONS TO AVOID (STABILITY): N/A

INCOMPATIBILITY (MATERIAL TO AVOID): Strong oxidizing agents, strong acids

HAZARDOUS DECOMPOSITION BY-PRODUCTS: Carbon oxides are expected to be, under fire conditions, the primary hazardous decomposition products.

HAZARDOUS POLYMERIZATION: N/A

CONDITIONS TO AVOID (POLYMERIZATION): N/A

HAZARDOUS POLYMERICATION BY-PRODUCTS: N/A



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SECTION 11: TOXICOLOGICAL INFORMATION

SIGNS AND SYMPTOMS OF OVEREXPOSURE: N/A

ACUTE EFFECTS:

EYE CONTACT: Can be irritating to the eyes.

SKIN CONTACT: Can cause skin irritation if absorbed through skin.

INHALATION: Can cause respiratory tract irritation if inhaled.

INGESTION: Harmful if ingested.

TARGET ORGAN EFFECTS: May cause damage to organs through prolonged or repeated exposure.

CHRONIC EFFECTS: May cause severe kidney problems through prolonged or repeated exposure. Brain damage may also occur. Skin allergy can develop.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing skin disorders, eye problem or impaired liver, kidney or respiratory function may be more susceptible to the effects of this substance

ACUTE TOXICITY VALUES

ORAL LD50 (Rabbit): 17000 mg/kg

DERMAL LD50 (Rabbit): >20 g/kg

INHALATION LC50 (state animal): N/A

LISTED CARCINOGEN:

No component of this product present at levels greater than or equal to 0.1 % is identified as a carcinogen or potential carcinogen by NTP / IARC / OSHA.

REPRODUCTIVE TOXICITY: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals

TERATOGENICITY: Laboratory experiments have shown teratogenic effects

SECTION 12: ECOLOGICAL INFORMATION



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DATA FROM TOXICITY TESTS ON AQUATIC AND/OR TERRESTERIAL ORGANISMS:

Ectotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (Tetraethylene Glycol)
LC50 / 96 h / Onocorhynchus mykiss - >1000 mg/l

Acute Daphnia Toxicity (Tetraethylene Glycol)
EC50 / 48 h / Daphnia magna - >1000 mg/l

Acute Daphnia Toxicity (Diethylene Glycol)
EC50 / 48h / Water flea – 46500mg/l

Acute Fish Toxicity (Triethylene Glycol)
LC50 / 24 hours / Goldfish - >5000 mg/l

Acute Fish Toxicity (Triethylene Glycol)
LC50 / 96 h / Golden orfe - >100 mg/l

ENVIRONMENTAL FATE: Biodegradation is expected.

BIOACCUMULATION POTENTIAL: Does not bioaccumulate

POTENTIAL TO MOVE FROM SOIL TO GROUNDWATER: No specific data available

OTHER ADVERSE ENVIRONMENTAL EFFECTS: No data available

SECTION 13: DISPOSAL CONSIDERATIONS

CONTAINERS TO USE: No specific recommendations

RECOMMENDED DISPOSAL METHODS: Whatever cannot be saved for recovery or recycling should be disposed of in an approved waste facility in accordance with Federal, State/Provincial and Local requirements.

PHYSICAL AND CHEMICAL PROPERTIES THAT MAY AFFECT DISPOSAL ACTIVITIES: No specific information available



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WHENEVER POSSIBLE, MATERIAL SHOULD NOT BE ALLOWED TO ENTER SEWAGE DISPOSAL SYSTEMS.

SPECIAL PRECAUTIONS FOR LANDFILL OR INCINERATION ACTIVITIES: No specific information available

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (49 CFR 172.101)

PROPER SHIPPING NAME: Tetraethylene Glycol

SHIPPING SYMBOLS: N/A

HAZARD CLASS: N/A

UN/NA NUMBER: N/A

PACKING GROUP: N/A

LABELS REQUIRED: N/A

SPECIAL PROVISIONS (172.102): none

PACKAGING AUTHORIZATIONS

A) EXCEPTIONS: N/A

B) NON-BULK PACKAGING: N/A

C) BULK PACKAGING: N/A

QUANTITY LIMITATIONS:

A) PASSENGER, AIRCRAFT OR RAILCAR: no limit

B) CARGO AIRCRAFT ONLY: no limit

VESSEL STOWAGE REQUIREMENTS

A) VESSEL STOWAGE: N/A

B) OTHER: none

IATA

UN NUMBER: N/A

PROPER SHIPPING NAME: N/A

CLASS: N/A

PACKAGING GROUP: N/A

SPECIAL PROVISIONS: N/A

EXCEPTED QUANTITY

MAXIMUM PER INNER PACKAGE: N/A

MAXIMUM PER PACKAGE: N/A



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LIMITED QUANTITY

PACKING INSTRUCTION: N/A

MAXIMUM PER PACKAGE: N/A

PASSENGER AIRCRAFT

PACKING INSTRUCTION: N/A

MAXIMUM PER PACKAGE: N/A

CARGO AIRCRAFT: N/A

PACKING INSTRUCTION: N/A

MAXIMUM PER PACKAGE: N/A

ERG CODE: N/A

IMDG

UN NUMBER: N/A

PROPER SHIPPING NAME: N/A

CLASS OR DIVISION: N/A

SUBSIDIARY RISK(S): N/A

PACKING GROUP: N/A

SPECIAL PROVISIONS: N/A

LIMITED AND EXCEPTED QUANTITY PROVISIONS

LIMITED QUANTITIES: N/A

EXCEPTED QUANTITIES: N/A

PACKING

INSTRUCTIONS: N/A

PROVISIONS: N/A

IBC

INSTRUCTIONS: N/A

PROVISIONS: N/A

PORTABLE TANKS AND BULK CONTAINERS

TANK INSTRUCTIONS: N/A

PROVISIONS: N/A

EmS:

STOWAGE AND SEGREGATION: N/A

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS



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TSCA (TOXIC SUBSTANCE CONTROL ACT): All of the components of this material are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Spills of this product over the RQ (reportable quantity) must be reported to the National Response Center. The RQ for this product, based on the RQ for Ethylene Glycol (94% maximum) of 5,000 pounds, is 5,319 pounds. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulation.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): This product contains the following chemicals subject to annual release reporting requirements under SARA Title III, Section 313 (40 CFR 372); Ethylene Glycol 112-60-7 80-100%

311/312 HAZARD CATEGORIES: Acute health, Chronic health

Immediate Hazard: Skin and eye irritation

Delayed Hazard: Repeated exposures over long term can cause kidney problems

Fire Hazard: No

Pressure Hazard: No

Reactivity Hazard: No

313 REPORTABLE INGREDIENTS: This product contains the following chemicals subject to annual release reporting requirements under SARA Title III, Section 313 (40 CFR 372); Ethylene Glycol 112-60-7 80-100%

CLEAN WATER ACT (CWA): none of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

CLEAN AIR ACT (CAA): This product is not known to contain or to have been manufactured with ozone depleting substances as defined in 40 CFR Part 82, Appendix A to Subpart A.

STATE REGULATIONS:

California: This product may contain the following substances known to the State of California to cause cancer and/or reproductive harm: 1,4-Dioxane (trace amount).

Massachusetts: N/A

INTERNATIONAL REGULATIONS:

Persistent Organic Pollutants (United Nations): N/A

Initial List of Prior Informed Consent Chemicals (United Nations): N/A

Ozone Depleting Substances (Montreal Protocol): N/A

Greenhouse Gases (Intergovernmental Panel on Climate Change): N/A



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AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES: All of the ingredients of this product are listed on the Australian Inventory of Chemical Substances.

CANADA: DOMESTIC SUBSTANCES LIST: N/A

CANADA WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS): Class D - Division 2 - Subdivision B - (a toxic material causing other chronic effects).

CANADIAN ENVIRONMENTAL PROTECTION AGENCY TOXICS LIST: All of the ingredients are listed on the Canadian Domestic Substances List.

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES: All of the ingredients are listed on the EINECS inventory

EU CLASSIFICATION: N/A

EU RISK (R) AND SAFETY (S) PHRASES: N/A

NEW ZEALAND: N/A

PHILLIPPINE INVENTORY OF CHEMICALS AND CHEMICAL SUBSTANCES: N/A

SECTION 16: OTHER INFORMATION

Prepared by: KMCO

Disclaimer: This product is FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN. DO NOT TAKE INTERNALLY.

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For additional product information, please contact the KMCO Sales Office at (281) 272-4100.